What is claimed is:

1. A graphite nanofiber having a cylindrical structure in which graphene sheets each having an ice-cream cone-like shape whose tip is cut off are put in layers through catalytic metal particles; or a structure in which small pieces of graphene sheets having a shape adapted for a surface shape of a catalytic metal particle are put on top of each other in layers through said catalytic metal particles.

2. The graphite nanofiber as set forth in claim 1, wherein said graphite nanofiber having a cylindrical structure has a through hole, which is vacant or filled with amorphous carbon and a diameter thereof ranges from 10 nm to 600 nm.

3. The graphite nanofiber as set forth in claim 1, wherein a constituent metal of said catalytic metal particles comprises Fe, Co or an alloy including at least one of these metals.

4. The graphite nanofiber as set forth in claim 2, wherein a constituent metal of said catalytic metal particles comprises Fe, Co or an alloy including at least one of these metals.

5. An electron-emitting source, which comprises a carbon layer deposited on a surface of an electrode substrate or on patterned surface portions of an electrode substrate, wherein said carbon layer comprises graphite nanofibers as set forth in any of claims 1 to 4.

6. The electron-emitting source as set forth in claim 5, wherein said electrode substrate on which said carbon layer is formed comprises Fe, Co or an alloy including at least one of these metals.

7. A method for preparing an electron-emitting source, comprising the step of:

growing a graphene sheet on a surface of an electrode substrate or on patterned surface portions of a patterned electrode substrate, which comprises Fe, Co or an alloy including at least one of these metals, using a carbon-containing gas and hydrogen gas according to a thermal CVD technique to thus give a growth layer

of graphite nanofibers as set forth in any of claims 1 to 4.

8. A method for preparing an electron-emitting source, comprising the steps of:

preparing a paste by dispersing graphite nanofiber powder as set forth in any of claims 1 to 4 in a solvent; and

then applying said paste onto a surface of an electrode substrate; or

preparing a dispersion by dispersing said powder in a solvent;

immersing an electrode substrate in said dispersion; and

depositing said graphite nanofibers on said electrode substrate by electro-deposition.

9. A display element, comprising a plurality of transparent conductive films having a desired pattern, an electron-emitting source formed by applying a carbon layer comprising graphite nanofibers as set forth in any of claims 1 to 4 on patterned surface portions of a patterned electrode substrate and a luminous body opposed to said carbon layer, wherein said element is so designed that if selecting said carbon layer and said transparent conductive film and applying an electric voltage thereto, electrons are emitted from said carbon layer so that only a specific portion on said luminous body emits light.

10. A negative electrode carbonaceous material for batteries essentially consisting of graphite nanofibers as set forth in any of claims 1 to 4.

11. A lithium ion secondary battery, comprising:

a positive electrode, which includes, as an active material for positive electrode, a lithium transition metal oxide;

a negative electrode, which includes a carbonaceous material as a negative electrode active material; and

an organic solvent-based electrolyte, and

wherein said carbonaceous material essentially consists of said graphite nanofibers as set forth in any of claims 1 to 4.